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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,494	10/23/2006	Marja Tiitta	2835-0168PUS1	1597

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BIRCH STEWART KOLASCH & BIRCH  
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EXAMINER
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SINGH, PREM C

ART UNIT	PAPER NUMBER
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1797

NOTIFICATION DATE	DELIVERY MODE
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02/05/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,494	<b>Applicant(s)</b> TIITTA ET AL.	
	<b>Examiner</b> PREM C. SINGH	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/16/2006; 12/19/2007; 12/28/2007.

### DETAILED ACTION

1. The Applicant's election with traverse in the reply filed 01/08/2009 in response to restriction requirement is noted. The species: ring opening, isomerization, alkylation, hydrocarbon reforming, hydrogenation and dehydrogenation lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1. Thus, the election restriction requirement is made final.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baird et al (WO 02/07881 A1) in view of Tsao et al (US 2002/0121457 A1).

4. With respect to claims 15 and 17, Baird discloses a method of converting hydrocarbons by adding noble metal catalyst to a hydrocarbon composition to effect ring opening reaction (See paragraph 0007, 0020, 0022, 0048). Baird further discloses that the noble metal catalyst is manufactured by a method comprising the following steps (See paragraph 0066):

(a) using a support comprising a zeolite selected from medium and large pore zeolites having acid sites ( See paragraph 0031, 0032, 0039);

(b) deposition of a noble metal selected from platinum, palladium, iridium and mixtures and combinations thereof by vaporization of the noble metal precursor selected from organometallic complexes such as acetylacetonates (See paragraph 0037, 0038);

(c) heat treatment at oxidizing or reducing conditions (See paragraph 0039).

It is to be noted that acetylacetonates include  $\beta$  diketonates. It is also to be noted that organometallic complexes should necessarily be reacting with the support as claimed, because Baird uses similar precursors and similar zeolites as that claimed by the Applicant.

Baird invention does not specifically disclose pre-treatment and optional modification of the support.

Tsao invention discloses a process similar to Baird for selective naphthenic ring opening of diesel fuels using a similar noble metal catalyst supported on a large pore zeolite (See paragraph 0003, 0013, 0030). Tsao further discloses modification of the zeolite with steam at a temperature of about 550-815°C (823-1088°K) to maintain the alpha acidity to the desired level (See paragraph 0048).

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Baird invention and modify the zeolite by heating as disclosed by Tsao to maintain the alpha acidity to the desired level.

Baird invention does not specifically disclose vaporization of noble metal precursor by gas phase deposition technique, however, the invention does disclose that the addition of metals (Ir or other Group VIII metals) to the support material can be accomplished by conventional techniques (See paragraph 0037). Tsao also discloses that Group VIII metalcomponent can be incorporated by any means known in the art (See paragraph 0049).

Thus, it would have been obvious to one skilled in the art at the time of invention to use any standard deposition technique, including gas phase deposition (evidenced by

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Lashdaf et al (Deposition of palladium and ruthenium  $\beta$ -diketonates on alumina and silica supports in gas and liquid phase, Applied Catalysis A: General 241(2003) 51-63; Abstract) because any standard deposition technique is expected to be equally effective to deposit Group VIII metals on the support.

5. Claim 16 has all the limitations of claim 15 and additionally requires middle distillate diesel fuel reacting in a reactor at 283-673°K under 10-200 bar pressure with hydrogen to accomplish opening of naphthenes with two and multiple rings to produce paraffins and mononaphthenes.

Limitations of claim 15 have been discussed above.

Baird further discloses a process of manufacture of middle distillate diesel fuel by transferring the feed to a reactor at a temperature of 150-400°C (423-673 K) and under a pressure of 100 to 3000 psig (6.9 to 207 bar) with hydrogen in the presence of a noble metal catalyst to accomplish opening of naphthenes with two and multiple rings to produce paraffins and mononaphthenes in the middle distillate region (See paragraph 0046, 0048, 0049). It is to be noted that when a compound containing multiple ring naphthene contacts the catalyst, the resulting product will contain paraffins as well as mononaphthenes, as claimed.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Baird, JR. et al (US 2002/0050466 A1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREM C. SINGH whose telephone number is (571)272-6381. The examiner can normally be reached on 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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